

SECTION UC-370**CLEANING AND TESTING GRAVITY SEWERS****PART 1 - GENERAL****1.01 SCOPE OF WORK**

The Contractor shall furnish all material, labor and equipment necessary to clean and test gravity sewers and sanitary force mains.

1.03 QUALITY ASSURANCE

Cleaning and testing shall be performed in strict accordance with these specifications.

PART 2 - PRODUCTS

(Not Used)

PART 3 - EXECUTION**3.01 GENERAL**

- A. Each section of gravity pipe sewer, upon completion or at such other time as the Engineer of Record may direct, is to be cleaned, tested and inspected. No more than 1,000 feet or 3 manhole to manhole runs may be tested at one time unless otherwise authorized by the Department.
- B. All repairs shown necessary by the tests are to be made; broken, cracked or obviously defected pipe replaced; all deposits removed, the sewer left true to line and grade, as herein specified, and entirely clean, free from lumps of cement, protruding gaskets, bulkheads, etc. and ready for use.
- C. Each section of sewer shall show, from each end, a full circle of light.
- D. Each manhole or other appurtenance to the system shall have the specified size and form, be watertight, neatly and substantially made with the top set permanently to exact position and grade.

3.02 DEFECTS

- A. Any defects found in the system are to be corrected by the Contractor to conform to the requirements of the Specifications.
- B. In the event that a sewer line or structure, such as a manhole, leaks during the period that the Warranty or Contract Bond is in effect, the Contractor shall be required to return and replace it with a new section of pipe or manhole or, if approved by the Department, to eliminate leaks by other approved methods.

- C. After the leakage has been stopped, all visible cracks shall be repaired inside the manhole.

3.03 INFILTRATION AND EXFILTRATION TEST

- A. Both infiltration and exfiltration tests shall be performed on the gravity line, unless otherwise directed by the Department.
- B. The allowable limits of infiltration, or exfiltration, or leakage, shall not exceed a rate of 100 gallons per inch of internal pipe diameter per mile of pipe per 24 hours with no allowance for laterals or manholes. Duration of all tests shall be a minimum of 2 hours.
- C. No more than three manhole sections or 1000 feet of sewer (whichever is the lesser) shall be tested at any one time.
- D. Prior to testing for infiltration, the system shall be pumped out so that normal infiltration conditions exist at the time of the testing. The amounts of infiltration or exfiltration shall be determined by pumping into or out of calibrated drums, or by other approved methods.
- E. The exfiltration test will be conducted by filling the portion of the system being tested with water to a level above the crown of any service lateral which will provide a minimum difference in elevation between the test water level and the crown of any service lateral connected to the test portion of two feet (2.0'); or, in the event there are no service laterals in the test portion, a minimum difference in elevation between the crown of the highest portion of the sewer and the test water level of five feet (5.0').
- F. All labor materials and equipment for leakage tests shall be furnished by the Contractor.

3.05 ACCEPTANCE

- A. No pipe installation will be accepted if the leakage is greater than that determined by the above requirements.
- B. The Contractor shall locate and repair all leaks until the leakage is reduced to the limits specified. Any observed leaks or any obviously defective joints or pipes shall be repaired or replaced as directed by the Department, even though the total leakage is below that specified above.
- C. The tests and repairs shall be continued or repeated until the Department is assured that the leakage into or from the section of line under test is less than the amount specified.

3.06 TIGHTNESS STANDARDS

Effective since 1987 (Per Public Notice No. 9), the Department adopted new tightness standards for gravity sanitary sewers and sanitary force mains to be installed within the it's service area. The new standards for maximum allowable exfiltration rates are to minimize the risk of contaminating the County's groundwater supplies in the Biscayne Aquifer. These standards are issued to comply with those adopted into Chapter 24 of the County Code by Ordinance 86-42, and to have leakage requirements for clay and PVC pipe materials. The term "cone of influence" as used below refers

to limits of wellfield protection areas as defined the County. Tightness standards are specified below:

A. GRAVITY SANITARY SEWERS

The maximum allowable exfiltration, infiltration, or leakage in gravity sanitary sewers shall be as listed below, with no allowances for manholes or laterals. The duration of all tests shall be a minimum of two (2) hours. Any observed leaks or any obviously defective joints or pipes shall be replaced even when the total leakage is below that allowed. Only the piping materials listed for each specific area will be permitted in that area, including both gravity sanitary sewers and laterals. (Where reference is made to a "10 Day Travel Time" contact the Department or DERM for further information.)

1. Residential Zoned Areas

1.1a Within cone of influence and **outside** 10 Days Travel Time:

Mains: D.I.P. - 50 gpd/in. diameter/mile
C900 PVC - 50 gpd/in. diameter/mile

Laterals: may be D.I.P., C900 PVC, or
X.H.C.I.(Extra Heavy Cast Iron Soil Pipe)

1.1b Within cone of influence and **within** 10 Days Travel Time:

Mains and laterals shall only be D.I.P.

1.2 Outside of cone influence:

Mains: D.I.P. - 100 gpd/in. diameter/mile
C900 PVC - 100 gpd/in. diameter/mile
PVC - 100 gpd/in. diameter/mile
V.C.P. - 100 gpd/in. diameter/mile

Laterals: may be D.I.P., C900 PVC, PVC, or
X.H.C.I. or V.C.P.

2. Commercial Zoned Areas

2.1a Within cone of influence and **outside** 10 Days Travel Time:

Mains: D.I.P. - 20 gpd/in. diameter/mile
C900 PVC - 20 gpd/in. diameter/mile

Laterals: may be D.I.P., C900 PVC or X.H.C.I.

2.1b Within cone of influence and **within** 10 Days Travel Time:

Mains and laterals shall only be D.I.P.

Note: In any event and any zoned areas, the Department may require D.I.P. based on minimum cover requirements, installation in grass areas or at depths of 14 feet or greater.

2.2 Outside of cone influence:

Mains: D.I.P. - 100 gpd/in. diameter/mile
C900 PVC - 100 gpd/in. diameter/mile
PVC - 100 gpd/in. diameter/mile
V.C.P. - 100 gpd/in. diameter/mile

Laterals: may be D.I.P., C900 PVC, PVC, or
X.H.C.I. or V.C.P.

3. Industrial Zoned Areas

3.1 Within cone of influence:

Mains: D.I.P. - 20 gpd/in. diameter/mile

Laterals: may be D.I.P. or X.H.C.I.

3.2 Outside of cone influence:

Mains: D.I.P. - 100 gpd/in. diameter/mile
V.C.P. - 100 gpd/in. diameter/mile

Laterals: may be D.I.P., X.H.C.I. or V.C.P.

B. SANITARY FORCE MAINS - ALL AREAS

1. Sanitary force mains shall be constructed of either polyethylene lined ductile-iron pipe and fittings or prestressed concrete plastic lined (90° T.D.C. minimum) cylinder pipe and fittings meeting current Department Specifications.
2. No such ductile-iron pipe sanitary force main shall exfiltrate or leak at a rate greater than the allowable leakage rate specified in AWWA C600 (latest edition) at a test pressure of one hundred (100) psig. The duration of all test shall be a minimum of two (2) hours. Any observed leaks or any obviously defective joints or pipes shall be repaired or replaced even when the total leakage is below that allowed.
3. No such prestressed concrete cylinder pipe sanitary force main shall exfiltrate or leak at a rate greater than one-half ($\frac{1}{2}$) the allowable leakage rate specified for ductile iron pipe in AWWA C600 (latest edition) at a test pressure of one hundred (100) psig. The duration of all test shall be a minimum of two (2) hours. Any observed leaks or any obviously defective joints or pipes shall be repaired or replaced even when the total leakage is below that allowed.
4. See Section UC-170, "Cleaning and Testing of Main".

END OF SECTION